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PARTICLES AND FIELDS RESEARCH

A Bibliography with Author Index

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

PARTICLES AND FIELDS RESEARCH

A Bibliography with Author Index

An extensive selection of references to journal articles,
books, conference proceedings, and English transla-
tions of foreign journals that were published during the
period January 1958–May 1966

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Scientific and Technical Information Division

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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INTRODUCTION

The pages that follow present a bibliography of published articles on particles and fields research from 1958 to May 1, 1966. It is intended to be comprehensive only in one limited area: rocket and satellite research on energetic particles (those with energies exceeding 10 electron volts) and on magnetic or electric fields. We have not been comprehensive in the related area of ground-based studies: Specifically, we have not included all of the extensive literature on time variations of the geomagnetic field, but rather have made a modest, hopefully representative selection from those portions of it bearing some relation to the space program. We have also not attempted to cover all of the subject of ground-based cosmic ray measurements, where the extensive literature on time variations, on μ mesons, and on air showers bears little relation to the space program. Similarly, in the area of ground-based auroral observations, we have tried to select works related to the space effort. Finally, we have excluded nearly all ionospheric work.

The Bibliography contains approximately 2,500 entries. Listings were obtained from two major sources: (1) compilations of references from review articles and (2) a search of the tables of contents of selected journals, books, and published proceedings of various meetings. There are obvious built-in prejudices in the selection process related to our knowledge of the existence of certain articles or books.

We have included in this Bibliography only "published" works in English, defined by us in an operational sense as those articles appearing in a standard journal or book and available on the open shelves of any well-established and reasonably comprehensive scientific library. The Goddard library was used as a model. Thus preprints, institutional documents, reports receiving limited distribution, classified reports, and the like were not included. Most articles published before 1958 were excluded, except those which are still referred to often. In a few cases (e.g. Space Research VI, Proceedings of the Pasadena Solar Wind Conference, Bergen Radiation Belt Symposium, and London Cosmic Ray Conference) we have obtained preliminary Tables of Contents prior to publication. We are most grateful to the various editors who have been cooperative in this respect. Abstracts of talks given at meetings, even though available in the published literature, were specifically excluded. Articles in Russian or other languages were included only if available in translation in a published book or journal.

Each entry was checked against the original source for accuracy of title, spelling of authors' names, volume number, page number, etc. This was accomplished by sorting the entry cards according to journal name, volume number, and page number, before the cards were alphabetized and sorted into categories. At the same time the Tables of Contents of many of the journals could be checked for possible omissions. The Journal of Geophysical Research was used as a model for the form of the references, with the exception that underscoring was used in place of italics to ease the burden of final typing. Inclusive page numbers were obtained wherever possible.

The sorting of the individual listings into specific sections was often difficult and somewhat arbitrary. Even though many articles would be appropriate to two or more categories, we decided to avoid multiple listings. One might have to search a bit, therefore, to find a specific article. An author index was compiled in order to aid the reader in his search. All authors of an article have been included in this index, not just the first.

The Tables of Contents and/or indices of the following journals have been specifically searched for inclusion of listings (numbers in the second parentheses give the total numbers of entries included from each journal):

Astrophysical Journal (Thru April, 1966) (52)

Journal of Atmospheric and Terrestrial Physics (Thru April, 1966) (36)

Journal of Geophysical Research (From 1959 thru May 1, 1966) (807)

Physical Review (Thru March 31, 1966) (120)

Physical Review Letters (From inception thru May 16, 1966) (82)

Physics of Fluids (Thru April, 1966) (18)

Planetary and Space Science (From inception through March, 1966) (131)

Reviews of Geophysics (From inception through February, 1966) (9)

Science (Through May 13, 1966) (26)

Space Science Reviews (From inception through March, 1966) (32)

A similar search in Nature was abandoned as hopeless because of the large number of issues and the complete inadequacy of the index for such a search.

The Tables of Contents of the following books and conference proceedings have been searched for inclusion of listings (numbers in parentheses give the number of listings from each source):

Space Research I, edited by H. Kallman Bijl, Proceedings of the First International Space Science Symposium (COSPAR), Nice, January 11-16, 1960, North-Holland Publishing Co., Amsterdam, 1960 (22).

Space Research II, edited by H. C. van de Hulst, C. de Jager, and A. F. Moore, Proceedings of the Second International Space Science Symposium (COSPAR), Florence, April 10-14, 1961, North-Holland Publishing Co., Amsterdam, 1961 (20).

Space Research III, edited by W. Priester, Proceedings of the Third International Space Science Symposium (COSPAR), Washington, D. C., May 2-8, 1962, North-Holland Publishing Co., Amsterdam, 1963 (29).

Space Research IV, edited by P. Muller, Proceedings of the Fourth International Space Science Symposium, Warsaw, June 4-10, 1963, North-Holland Publishing Co., Amsterdam, 1964 (28).

Space Research V, edited by D. G. King-Hele, Proceedings of the Fifth International Space Science Symposium (COSPAR), Florence, May 12-16, 1964, North-Holland Publishing Co., Amsterdam, 1965 (39).

Space Research VI, edited by R. L. Smith-Rose, Proceedings of the Sixth International Space Science Symposium (COSPAR), Mar del Plata, Argentina, May 10-21, 1965, to be published, 1966.

Proceedings of the International Conference on Cosmic Rays and the Earth Storm, Volumes 1-3, Kyoto, September 4-15, 1961 (Also published in J. Physical Society of Japan, Supplement A-I-III, 1962) (158).

Proceedings of the International Conference on Cosmic Rays (IUPAP), edited by R. R. Daniel et al., Jaipur, India, December 2-14, 1963, Vols. 1-6 (109).

Proceedings of the Ninth International Conference on Cosmic Rays (IUPAP), London, December 6-17, 1965, The Institute of Physics and the Physical Society, to be published, 1966 (123).

Proceedings of the Plasma Space Science Symposium, edited by C. C. Chang and S. S. Huang, Washington, D. C., June 11-14, 1963, D. Reidel Publishing Co., Dordrecht-Holland, 1965 (12).

Research in Geophysics, Vol. 1, Sun, Upper Atmosphere, and Space, edited by Hugh Odishaw, papers from IGY review symposium, Los Angeles, August 12-16, 1963, M.I.T. Press, Cambridge, 1964 (8).

Auroral Phenomena, edited by Martin Walt, First Lockheed Research Symposium on Space Science, Palo Alto, California, January, 1964, Stanford University Press, 1965 (9).

The Solar Wind, Proceedings of a conference held at California Institute of Technology, Pasadena, April 1-4, 1964, sponsored by the Jet Propulsion Laboratory, Pergamon Press, to be published, 1966 (29).

Radiation Trapped in the Earth's Magnetic Field, edited by B. M. McCormac, proceedings of the NATO Advanced Study Institute, Bergen, Norway, August 16- September 3, 1965, D. Reidel Publishing Co., Dordrecht, Holland, to be published, 1966 (48).

Space Science, edited by Donald P. LeGalley, John Wiley and Sons, New York, 1963 (6).

Space Physics, edited by Donald P. LeGalley and Alan Rosen, John Wiley and Sons, New York, 1964 (10).

Introduction to Space Science, edited by W. N. Hess, Gordon and Breach, New York, 1965 (6).

A special effort was made to include results of the Russian space program which are available in the published literature in English. Articles which Russian scientists desire to have wide distribution in the Western world are usually submitted by them as part of the proceedings of international conferences, as for example, the yearly COSPAR symposia (Space Research I-VI) and the biennial IUPAP Cosmic Ray Conferences. In addition, a number of Russian journals containing articles on fields and particles are translated cover-to-cover and published in this country or in England. In the Bibliography, full references are given for the English translations and abbreviated references in parentheses for the Russian originals. The Tables of Contents of the following English translations of Russian journals have been searched for inclusion of listings (numbers in parentheses give the number of listings from each source):

Geomagnetism and Aeronomy, published by the American Geophysical Union (translation of Geomagnetizm i Aeronomiya, abbreviated G. i A. in the Bibliography) (170).

Artificial Earth Satellites, issues No. 1-6 published in book form by Plenum Press; issues No. 7-17 in journal form by Consultants Bureau; selected articles also translated in Planetary and Space Science (translation of Iskusstvennye Sputniki Zemli, abbreviated I. S. Z. in bibliography; publication ceased in 1962) (37).

Cosmic Research, published by Consultants Bureau; unpublished translation also available from Air Force Systems Command, Wright-Patterson Air Force Base, Ohio (Translation of Kosmicheskie Issledovaniya, abbreviated Kosm. Issl.; a replacement for I. S. Z., begun in 1963) (32).

Soviet Astronomy - AJ, published by American Institute of Physics (translation of Astronomicheskii Zhurnal, abbreviated Astron. Zh.) (34).

Soviet Physics - Uspekhi, a review journal published by A. I. P. (translation of Uspekhi Fizicheskikh Nauk) (7).

In addition, articles in fields and particles have appeared in Soviet Physics-Doklady (A.I.P.) and Bulletin of the Academy of Sciences USSR-Geophysics Series (A.G.U.), although these have not been comprehensively searched for this Bibliography. Finally, an All-Union Conference on Space Physics was held in Moscow on June 10-16, 1965, for which the Transactions were published in Russian late in 1965. A translation is available as NASA TTF-389, February, 1966, entitled Space Research. Included are many excellent summaries of results from the Russian space program. However, since the translation is an unpublished institutional document, the numerous individual articles have not been included in this Bibliography.

We are indebted to Dr. M. P. Nakada for his participation in an earlier version of this Bibliography, and to Drs. David Stern and Frank Jones for their assistance in compiling and sorting certain sections, particularly Cosmic Rays.

SECTION A

THE SOLAR WIND, COMETS, AND INTERPLANETARY MEDIUM

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